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Ultraviolet Water Cleanup Too Expensive, Pasadena Says

By MIKE WARD, *Times Staff Writer*

PASADENA—After two years of experimentation, city officials have given up on ultraviolet light as a means of cleaning up contaminated ground water and will turn to more conventional methods to deal with a growing pollution problem.

Willard Bangham, city water system manager, said tests have shown that ultraviolet light, because of the cost, is not a practical alternative for destroying volatile organic compounds that have polluted one-third of the city's water wells.

The cleanup project has taken on new urgency, Bangham said, because the city has been forced to close two wells this year, meaning that four of its 12 wells are out of service because of contamination with such compounds as trichloroethylene (TCE) and perchloroethylene (PCE). One well was closed this year because of a rise in TCE levels, and another was shut down because the state sharply reduced the amounts of carbon tetrachloride permitted in drinking water.

An official said the amount of electrical energy required to run the pilot project was so high that a full-scale system would be economically impractical.

"When only two out of 12 wells were closed, we were able to work around it," Bangham said, "but with four out of 12 sidelined, we're hurting."

One result, he said, is that the city will increase its reliance on water imported through the Metropolitan Water District, which traditionally supplies 60% of the city's water.

Cooperating With City

A city study in 1986 concluded that ground water had been contaminated by solvents dumped at the Jet Propulsion Laboratory from the early 1940s to 1962. JPL has been cooperating with the city in funding research on cleanup methods using ultraviolet light.

The first test, in 1987, showed that running water through an ultraviolet and ozone process was effective in destroying most of the volatile organic compounds that have seeped into ground water, but only moder-

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ately effective with carbon tetrachloride.

The city then undertook another experiment, using aeration to remove organic compounds from water, then processing the resulting gases through combinations of ultraviolet light, ozone and hydrogen peroxide.

Bangham reported this week that tests conducted by James M. Montgomery Consulting Engineers Inc. show that although ultraviolet light is effective in destroying the harmful compounds in the emissions, it is an expensive process. The amount of electrical energy required to run the pilot project was so high that a full-scale system would be economically impractical, he said.

Even using a more conventional system will be expensive, Bangham said. He said the city estimates that it will cost $4 million for design and construction and $800,000 a year for operation and maintenance of a system to treat contaminated water from four wells along the each side of the Arroyo Seco, across from the JPL. Bangham said the city will try to negotiate an agreement with JPL to pay a large part of the treatment plant cost.

Bangham said the city hopes to solicit treatment-system proposals within 90 days.

The city is not tied to any particular system, Bangham said, but the most likely option is an air-stripping tower. In this process, air is pumped upward as water comes downward through a tower about 40 feet high. The contaminants are stripped from the water and discharged into the air or trapped in a filter system. The filtration system is needed to avoid simply transferring the pollutants from water to the air.

Since ultraviolet light has proven too expensive for treating the emissions, Bangham said, the most likely alternative is a carbon filtration system. The disadvantage of this system is that the carbon filters trap the contaminants and eventually must be disposed of as hazardous waste. By contrast, the city's experimental tests with ultraviolet light, ozone and hydrogen peroxide converted the emissions into harmless chloride ions, carbon dioxide and water vapor.